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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Ido MILSTEIN et al.

Serial No.: 10/597,226

Filed: January 22, 2008

For: Vessel Centerline Determination

Examiner: Matthew C. BELLA

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Confirmation No.: 7945

Group Art Unit: 2624

Attorney Docket: 35504

Commissioner for Patents
P. O. Box 1450
Alexandria, VA 22313-1450

REQUEST FOR CORRECTED FILING RECEIPT

Attached is an annotated copy of the Corrected Filing Receipt dated March 17, 2010 for the above-referenced Application for which issuance of a Corrected Filing Receipt is respectfully requested.

There is an error with respect to *Foreign Applications* field, please correct as follows:

Foreign Applications

~~UNITED STATES OF AMERICA 60/536661 01/15/2004~~

REMARKS

Earlier U.S. Application no. 60/536,661 should be omitted from the *Foreign Applications* field.

The present application is a National Phase Application of PCT Application No. PCT/IL2004/001169, filed on December 26, 2004, which claims the benefit under 35 U.S.C. §119(e) of US Provisional Application No. 60/536,661, filed on January 15, 2004. Earlier U.S. Application No. 60/536,661 has not been claimed as foreign application but only has been claimed as domestic priority. Therefore, the afore-mentioned information should be reflected on the corrected filing receipt.

Attached is also an annotated copy of the Filing Receipt.

Applicants respectfully request issuance of a Corrected Filing Receipt in compliance with the Preliminary Amendment, Application Data Sheet and Executed Declaration and Power of Attorney as filed.

Issuance of a Corrected Filing Receipt to reflect the items as mentioned above is respectfully requested.

Respectfully submitted,



Martin D. Moynihan
Registration No. 40,338

Date: April 26, 2010



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY. DOCKET NO	TOT CLAIMS	IND CLAIMS
10/597,226	01/22/2008	2624	5780	227/05263	95	8

CONFIRMATION NO. 7945

CORRECTED FILING RECEIPT

67801
MARTIN D. MOYNIHAN d/b/a PRTSI, INC.
P.O. BOX 16446
ARLINGTON, VA 22215



Date Mailed: 03/17/2010

Receipt is acknowledged of this non-provisional patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please submit a written request for a Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections**

Applicant(s)

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Assignment For Published Patent Application

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Power of Attorney:

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Domestic Priority data as claimed by applicant

This application is a 371 of PCT/IL04/01169 12/26/2004
which claims benefit of 60/536,661 01/15/2004

Foreign Applications

~~UNITED STATES OF AMERICA 60/536661 01/15/2004~~ ← REMOVE

If Required, Foreign Filing License Granted: 02/25/2008

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 10/597,226**

Projected Publication Date: Not Applicable

Non-Publication Request: No

Early Publication Request: No

Title

Vessel Centerline Determination

Preliminary Class

382

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at <http://www.uspto.gov/web/offices/pac/doc/general/index.html>.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, <http://www.stopfakes.gov>. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4158).

LICENSE FOR FOREIGN FILING UNDER

Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

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This license is to be retained by the licensee and may be used at any time on or after the effective date thereof unless it is revoked. This license is automatically transferred to any related applications(s) filed under 37 CFR 1.53(d). This license is not retroactive.

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032/05263



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Ido MILSTEIN, et al.

Serial Number: Not yet assigned

5 Filed: December 26, 2004 as PCT/IL2004/001169 and Herewith as U.S.
National Stage

For: Vessel Centerline Determination

Art Unit: Not yet assigned

10 Honorable Commissioner of Patents
P.O. Box 1450
Alexandria, VA 22313-1450



15

PRELIMINARY AMENDMENT

Sir:

Further to the concurrent filing of the U.S. national stage of PCT Application No.
PCT/IL2004/001169, kindly amend the application as indicated in the following pages prior to
20 examination.

IN THE SPECIFICATION

Kindly replace the following section, on page 1, immediately after the title, with the following:

--RELATED APPLICATIONS

5

The present application is a US National Phase of PCT Application No. PCT/IL2004/001169, filed on December 26, 2004, which claims the benefit under 35 U.S.C. 119(e) of US Provisional Application 60/536,661 filed January 15, 2004, the disclosure of which is incorporated herein by reference.

10

This application is also related to a PCT application No. PCT/IL2004/001168 entitled "Targeted Marching", ~~having attorney's docket number 032/04082 being filed on the same date in the Israel Patent Office, filed on December 26, 2004~~ the disclosure of which is incorporated herein by reference.--

IN THE CLAIMS

1. (Currently amended) A method of centerline determination for a tubular tissue in a medical image data set defined in a data space, comprising:

receiving at least one start point and one end point inside a tubular tissue volume;

5 automatically determining a path between said points that remains inside said volume;

automatically segmenting said tubular tissue using said path; and

automatically determining a centerline for said tubular tissue from said segmentation,

wherein said receiving, said determining a path, ~~and~~ said segmenting, and said determining a centerline are all performed on a same data space of said medical image data set.

10 2. (Original) A method according to claim 1, wherein said tubular tissue comprises a body lumen.

3. (Currently amended) A method according to claim 1 ~~or claim 2~~, wherein receiving
15 comprises receiving at most 4 points from a human user.

4. (Currently amended) A method according to claim 1 ~~or claim 2~~, wherein receiving
comprises receiving at most 2 points from a human user.

20 5. (Currently amended) A method according to ~~any of claims 1-4~~ claim 1, wherein
automatically determining a path comprises determining using targeted marching which uses a
cost function incorporating both path cost and estimated future path cost.

25 6. (Original) A method accord to claim 5, wherein determining a path comprises propagating
a sub-path from each of at least two of said received points until the sub-paths meet.

7. (Currently amended) A method accord to claim 5 ~~or claim 6~~, wherein determining a
path comprises propagating a sub-path from one of said received points until it meets another
of the received points.

30 8. (Currently amended) A method according to ~~any of claims 5-7~~ claim 5, wherein
propagating a sub-path comprises selecting a point and selecting a neighbor of the selected
point for further consideration responsive to said cost function.

9. (Currently amended) A method according to ~~any of claims 5-8~~claim 5, wherein a path cost of a point is a function of a local cost of a point and a path cost of at least one neighbor of the point.

5

10. (Original) A method according to claim 9, wherein a local cost of a point is a function of a probability of the point being inside or outside of the tubular tissue.

11. (Currently amended) A method according to claim ~~9 or claim 10~~, wherein a path cost is determined by ~~finding~~attempting to find at least an approximate solution to an equation including at least one extreme-type function that returns an extreme value of its operands.

10

12. (Original) A method according to claim 11, wherein if a solution is not found, at least one of said extreme-type functions is replaced by a constant value.

15

13. (Original) A method according to claim 12, said extreme-type function to replace is found by a min-max method.

20

14. (Currently amended) A method according to claim ~~9-11-13 or claim 10~~, wherein said equation includes an approximation of a gradient of the path cost.

15. (Currently amended) A method according to ~~any of claims 5-10~~claim 5, wherein a path cost of a point is a function of a probability of the point being inside or outside of the tubular tissue.

25

16. (Currently amended) A method according to claim ~~10 or claim 15~~, wherein said probability is determined using a histogram of data point values.

30

17. (Original) A method according to claim 16, comprising updating the histogram when a point is determined to be inside or outside of the tubular tissue.

18. (Original) A method according to claim 16, comprising updating the histogram when a point is selected.

19. (Original) A method according to claim 18, wherein said histogram is updated with a weight corresponding to a probability of the point being inside the tubular tissue.

5 20. (Currently amended) A method according to ~~any of claims 16-19~~claim 16, comprising generating a local histogram for a part of said vessel.

21. (Currently amended) A method according to ~~any of claims 16-20~~claim 16, wherein the histogram comprises an outside histogram for point values that are outside the tubular tissue.

10

22. (Original) A method according to claim 21, wherein the outside histogram includes also points inside the tubular tissue.

15 23. (Currently amended) A method according to ~~any of claims 16-22~~claim 16, wherein the histogram comprises an inside histogram for point values that are inside the tubular tissue.

24. (Currently amended) A method according to ~~any of claims 5-23~~claim 5, comprising selecting a target to be used in an estimating of said future cost.

20 25. (Original) A method according to claim 24, wherein said estimating is an underestimating.

26. (Currently amended) A method according to claim 24 ~~or claim 25~~, wherein said estimating is based on an average cost per distance unit.

25 27. (Currently amended) A method according to ~~any of claims 24-26~~claim 24, wherein said estimating is based on an Euclidian distance to said target.

28. (Currently amended) A method according to ~~any of claims 24-27~~claim 24, wherein selecting a target comprises selecting from two or more possible targets.

30

29. (Original) A method according to claim 28, wherein selecting a target comprises projecting two vectors, one for each of two potential targets on a vector connecting a current point with a starting point of the current point and selecting a longer projection.

30. (Original) A method according to claim 24, wherein selecting a target comprises selecting one of said received points.

5 31. (Currently amended) A method according to ~~any of claims 1-4~~claim 1, wherein automatically determining a path comprises determining using fast marching.

32. (Currently amended) A method according to ~~any of claims 1-4~~claim 1, wherein automatically determining a path comprises determining using the A* path finding method.

10

33. (Currently amended) A method according to ~~any of claims 1-4~~claim 1, wherein automatically determining a path comprises determining using Dijkstra's minimal length path finding method.

15 34. (Currently amended) A method according to ~~any of claims 1-33~~claim 1, comprising correcting said determined path.

35. (Original) A method according to claim 34, wherein correcting said path comprising interconnecting path segments.

20

36. (Currently amended) A method according to ~~any of claims 1-35~~claim 1, wherein said segmenting uses a marching method for segmentation.

25 37. (Currently amended) A method according to ~~any of claims 1-35~~claim 1, wherein said segmenting uses a contour expansion method.

38. (Original) A method according to claim 36, wherein said marching method assigns a value for each point in said tubular tissue.

30 39. (Currently amended) A method according to ~~any of claims 36-38~~claim 36, wherein said marching method is a fast marching method.

40. (Currently amended) A method according to ~~any of claims 1-38~~claim 1, wherein said segmenting comprises ~~parameterizing~~generating a parameterization for points along said path.

41. (Original) A method according to claim 40, comprising propagating said parameterization.

42. (Original) A method according to claim 41, wherein said propagated parameterization is used to prevent leakage of said segmentation.

43. (Currently amended) A method according to claim 41 ~~or claim 42~~, wherein said parameterization is propagated substantially parallel to said path.

44. (Original) A method according to claim 43, comprising propagating said parameterization to being substantially perpendicular to a path cost gradient associated with said propagation.

45. (Original) A method according to claim 42, comprising collecting propagation statistics for different parameterization values.

46. (Original) A method according to claim 42, comprising determining a direction of propagation from a propagation of parameterization values.

47. (Original) A method according to claim 41, comprising controlling a direction of propagation based on said parameterization.

48. (Original) A method according to claim 45, comprising limiting propagation of at least one parameterization value based on said statistics.

49. (Currently amended) A method according to claim 48, wherein limiting comprises limiting propagation to be relatively substantially locally uniform ~~volume~~ for nearby parameterizations.

50. (Currently amended) A method according to ~~any of claims 1-49~~claim 1, wherein said segmenting comprises partitioning said path into portions.

51. (Original) A method according to claim 50, comprising defining boundary planes between said portions.

52. (Currently amended) A method according to claim 50 ~~or claim 51~~, wherein said
5 portions overlap by a ~~relatively~~ substantially small amount.

53. (Currently amended) A method according to ~~any of claims 50-52~~ claim 50, wherein said portions are substantially straight lines.

10 54. (Currently amended) A method according to ~~any of claims 50-53~~ claim 50, wherein said partitioning is used to reduce leakage of said segmentation.

55. (Currently amended) A method according to ~~any of claims 1-54~~ claim 1, wherein said segmenting comprises propagating from said path.

15 56. (Currently amended) A method according to claim 55, wherein said propagating is limited to be substantially ~~relatively~~ perpendicular to said path.

57. (Currently amended) A method according to claim 55, wherein said propagating is
20 limited to be substantially ~~relatively~~ locally uniform in a radial direction.

58. (Currently amended) A method according to ~~any of claims 55-57~~ claim 55, wherein said propagating depends on a local curvature.

25 59. (Original) A method according to claim 58, wherein said local curvature is estimated by counting visited neighbors.

60. (Currently amended) A method according to ~~any of claims 1-57~~ claim 1, wherein said segmenting comprises segmenting using a histogram of data values to determine a probability
30 of a point being inside the tubular tissue.

61. (Original) A method according to claim 60, wherein different parts along said path have different histograms.

62. (Original) A method according to claim 61, wherein said histograms are created to vary smoothly between said parts.

5 63. (Currently amended) A method according to claim 61 ~~or claim 62~~, wherein a noise level in at least one of said histograms is reduced using a global histogram.

64. (Currently amended) A method according to ~~any of claims 60-63~~claim 60, comprising repeatedly updating said histograms during said segmenting.

10

65. (Currently amended) A method according to ~~any of claims 1-64~~claim 1, comprising cleaning the segmentation.

15

66. (Currently amended) A method according to ~~any of claims 1-65~~claim 1, wherein determining a centerline comprises generating a distance map of said tubular tissue, of distances from an outer boundary of said tubular tissue, inwards.

67. (Original) A method according to claim 66, wherein generating a distance map comprises using morphological skeletonization on said segmentation.

20

68. (Currently amended) A method according to claim 66, wherein ~~determining~~generating a distance map comprises using fast marching on said segmentation.

25

69. (Currently amended) A method according to ~~any of claims 66-68~~claim 66, wherein determining a centerline comprises finding a path in said distance map.

70. (Original) A method according to claim 69, wherein finding a path for said centerline comprises targeted marching from at least one end of said segmentation.

30 71. (Original) A method according to claim 70, wherein said targeted marching for finding a path comprises taking a local curvature into account.

72. (Currently amended) A method according to ~~any of claims 1-71~~claim 1, wherein said data set is three dimensional.

73. (Original) A method of segmenting an organ in a medical image data set, comprising:

- 5 dividing said data set into portions; and
 using a different probability histogram in each of at least two of said portions for determining if a point belongs in the segmentation.

74. (Original) A method according to claim 73, comprising smoothing at least two histograms,
10 for two neighboring portions.

75. (Original) A method according to claim 74, wherein said smoothing comprises registering a plurality of points in both of said neighboring histograms.

15 76. (Currently amended) A method according to ~~any of claims 73-75~~claim 73, comprising correcting said different histograms using a global histogram that encompasses at least two of said different histograms.

77. (Currently amended) A method of segmenting an organ in a medical image data set,
20 comprising:

- defining a plurality of partially overlapping portions in said data set, which portions cover at least one object of interest;
 separately segmenting each of said portions; and
 combining said segmentations to yield a single segmentation of said at least one object
25 of interest.

78. (Original) A method according to claim 77, wherein said portions are selected to divide a tubular organ into substantially straight sections.

30 79. (Original) A method of segmenting an organ in a medical image data set, comprising:
 propagating a segmentation in said data set; and
 applying a curvature limitation to said propagation.

80. (Original) A method according to claim 79, wherein applying a curvature limitation comprises counting visited neighbors.

81. (Original) A method of propagating parameterization in a medical image data set,
5 comprising:

providing an initial parameterization in said data set along at least one line;

propagating a parameterization from said line, wherein said propagation is limited to being substantially parallel to said at least one line.

10 82. (Original) A method according to claim 81, comprising propagating said parameterization to have a gradient which is substantially perpendicular to a gradient of a path cost associated with said propagation.

83. (Currently amended) A method according to claim 81 ~~or claim 82~~, comprising limiting
15 an angle between (a) a spatial vector defined between a starting point of the parameterization along said line and ending at a current point of propagation of parameterization and (b) said path, to being close to perpendicular.

84. (Original) A method according to claim 83, wherein said limiting comprises reducing
20 leakage of a segmentation by said limiting.

85. (Currently amended) A method according to ~~any of claims 81-83~~ claim 81, wherein said medical image data set is a three-dimensional data set.

25 86. (Currently amended) A method of ~~centerline~~ path finding in a distance map, comprising:

providing a distance map of an organ having a centerline;

determining a desired tradeoff between curvature of a path and (a) local curvature of a path and (b) a path remaining near said centerline ;and

30 finding a path in said map while applying limitations of (a) local curvature of the path and (b) the path remaining near said centerline,

wherein said finding a path comprises applying said trade-off in a manner which is uniform at points along a path in organs having cross-sectional areas different from each other by more than 50%.

5 87. (Original) A method according to claim 86, wherein said limitations are applied as part of a targeted marching method in which a path is found by propagation of wave front using a cost function which depends on both a local cost and an estimated cost to target.

88. (Original) A method according to claim 87, wherein said trade-off is applied to at least two
10 points in a same organ.

89. (Original) A method according to claim 87, wherein said trade-off is applied to two different organs in a same data set.

15 90. (Currently amended) A method according to ~~any of claims 86-89~~ claim 86, wherein applying said tradeoff comprises using a formula for trading off which includes an exponent and normalization of organ diameter.

91. (Currently amended) A method according to ~~any of claims 86-90~~ claim 86, wherein
20 said tradeoff is uniform on different parts of a cross-section of said organ over a range of at least 50% of said cross-section, such that same movement has a similar effect on curvature.

92. (Currently amended) A method of centerline determination for a body tubular tissue in a medical data set, comprising:

25 providing a data set ~~including~~ representing a tubular tissue having n points in a three-dimensional medical dataset; and

finding a path in said data set in $O(n \log n)$ time of scalar calculation steps.

93. (Original) A method according to claim 92, wherein said path is found using no more than
30 $O(n)$ memory units.

94. (Original) A method of centerline determination for a body tubular tissue in a medical data set, comprising:

providing a data set including a tubular tissue having n points in a three-dimensional medical dataset; and

finding a path in said data set using no more than $O(n)$ memory units.

- 5 95. (New) A method according to claim 15, wherein said probability is determined using a histogram of data point values.

REMARKS

This application is submitted as a US National Phase Application of PCT Application PCT/IL2004/001169 filed on December 26, 2004. The present claim amendments are supported by the specification of the PCT application as originally filed.

5 Claims 1 to 95 are present in the application, of which claim 95 is new, claims 1, 3-5, 7-9, 11, 14-16, 20, 21, 23, 24, 26-28, 31-34, 36, 37, 39, 40, 43, 49, 50, 52-58, 60, 63-66, 69, 72, 76, 77, 83, 85, 86, and 90-92 are currently amended, and all the other claims are original.

The majority of these amendments are merely to cancel multiple dependencies of claims to fit the claims to US practice and save filing fees.

10 Claims 1, 11, 14, 40, 49, 52, 56, 57, 68, 77, 86, and 92 are cosmetically amended to improve clarity and language-consistency along the claims.

Claim 95, depending on claim 15, is added to explicitly claim embodiments that were originally explicitly claimed in claim 16.

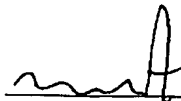
The present amendments do not limit the scope of the claims.

15 The present amendments are based on the claims searched by the International Searching Authority. Applicants note that searched claims (1-72 86-94) are indicated in the Written Opinion as meeting the criteria of PCT Articles 33(2) - 33(4).

In view of the favorable Written Opinion, applicants submit that the application is in order for allowance. A notice thereof is respectfully awaited.

20 Examination on the merits is respectfully requested.

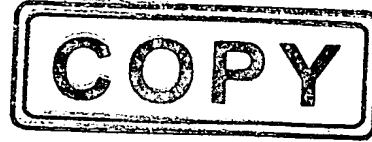
Respectfully submitted,
Ido MILSTEIN

25 
Maier Fenster
Reg. No. 41,016

30 July 17, 2006

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Application Data Sheet

Application Information

Application number::	Not yet assigned
Filing Date::	Herewith
Application Type::	Regular
Subject Matter::	Utility
CD-ROM or CD-R?::	None
Title::	Vessel Centerline Determination
Attorney Docket Number::	032/05263
Request for Early Publication?::	No
Request for Non-Publication?::	No
Suggested Drawing Figure::	7
Total Drawing Sheets::	5
Small Entity?::	No

Applicant Information

Applicant Authority Type::	Inventor
Primary Citizenship Country::	Israel
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Applicant Authority Type:: Inventor
Primary Citizenship Country:: Israel
Status:: Full capacity
Given Name:: Gad
Family Name:: Miller
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Country of Residence:: Israel
City of mailing address:: Kfar Yedidya
Country of mailing address:: Israel
Postal or Zip Code of mailing address:: 42940

Applicant Authority Type:: Inventor
Primary Citizenship Country:: France
Status:: Full capacity
Given Name:: Laurent
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Country of Residence:: France

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Country of mailing address:: France
Postal or Zip Code of mailing address:: F-92200

Correspondence Information

Correspondence Customer Number :: 44909

Representative Information

Representative Customer Number::	44909	
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Domestic Priority Information

Application ::	Continuity Type::	Parent Application::	Parent Filing Date::
This application	National Stage of	PCT/IL2004/001169	12/26/04
PCT/IL2004/001169	An application claiming the benefit under 35 USC 119(e)	60/536,661	01/15/04

[This application has no foreign priority claims]

Assignee Information

Assignee name:: Alogtec Systems Ltd.
Street of mailing address:: 2 Hapnina Street, 3rd Floor

City of mailing address:: Raanana
Country of mailing address:: Israel
Postal or Zip Code of mailing address:: 43107


Docket No.
35504

Declaration and Power of Attorney For Patent Application

English Language Declaration

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name,

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

VESSEL CENTERLINE DETERMINATION

the specification of which



is attached hereto.



was filed on **December 26, 2004** ~~as United States Application No. or PCT~~

International Application Number **PCT/IL2004/001169**

~~and was amended on~~ _____

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose to the United States Patent and Trademark Office all information known to me to be material to patentability as defined in Title 37, Code of federal Regulations, Section 1.56. Including for continuation-in-part applications, material information which became available between the filing date of the prior application and the national or PCT international filing date of the continuation-in-part application.

I hereby claim foreign priority benefits under Title 35, United States Code, Section 119(a)-(d) or Section 365(b) of any foreign application(s) for patent or inventor's certificate, or Section 365(a) of any PCT International application which designated at least one country other than the United States, listed below and have also identified below, by checking the box, any foreign application for patent or inventor's certificate or PCT International application having a filing date before that of the application on which priority is claimed.

Prior Foreign Application(s)

Priority Not Claimed

(Number)

(Country)

(Day/Month/Year Filed)



(Number)

(Country)

(Day/Month/Year Filed)



(Number)

(Country)

(Day/Month/Year Filed)



I hereby claim the benefit under 35 U.S.C. Section 119(e) of any United States provisional application(s) listed below:

60/536,661

(Application Serial No.)

January 15, 2004

(Filing Date)

(Application Serial No.)

(Filing Date)

(Application Serial No.)

(Filing Date)

I hereby claim the benefit under 35 U.S.C. Section 120 of any United States application(s), or Section 365(c) of any PCT International application designating the United States, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT International application in the manner provided by the first paragraph of 35 U.S.C. Section 112. I acknowledge the duty to disclose to the United States Patent and Trademark Office all the information known to me to be material to patentability as defined in Title 37, C.F.R., Section 1.56 which became available between the filing date of the prior application and the national or PCT International filing date of this application:

(Application Serial No.)

(Filing Date)

(Status)
(patented, pending, abandoned)

(Application Serial No.)

(Filing Date)

(Status)
(patented, pending, abandoned)

(Application Serial No.)

(Filing Date)

(Status)
(patented, pending, abandoned)

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

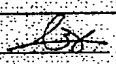
POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith. *(list name and registration number)*

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
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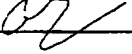
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